NUCLEAR DIVISION NEWS

UNION CARBIDE

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 1 — No. 2 | OAK RIDGE, TENNESSEE | Thursday, February 26, 1970

Oral Rinehart to Retire After 40 Years of Carbide Service

A Union Carbide executive, Oral Rinehart, Manager of Accounting and Finance for the Nuclear Division, will retire June 30 after more than 40 years of service with the Corporation.

Commenting on Rinehart's retirement, Roger F. Hibbs, President of the Nuclear Division, said that over the years Rinehart has made many important contributions to Union Carbide programs, particularly those of the Nuclear Division.

Oral Rinehart

"For more than two decades Mr. Rinehart has been involved in the accounting and finance operations of the Nuclear Division," Hibbs said. "During this period he has been a very important member of Union Carbide's management team. Mr. Rinehart is recognized widely as a leader in his field."

Rinehart, a native of Bellington, W. Va., attended West Virginia Business College and has taken special courses in accounting and CPA coaching.

He joined Union Carbide in May, 1929, at the Hastings, West Virginia, Plant. He was transferred to the South Charleston facility seven years later. He was assigned to the plant at Institute, W. Va., at the start of construction, and transferred to Oak Ridge in 1944.

Rinehart was one of the organizers and charter members of the Knoxville Chapter of the National Association of Accountants.

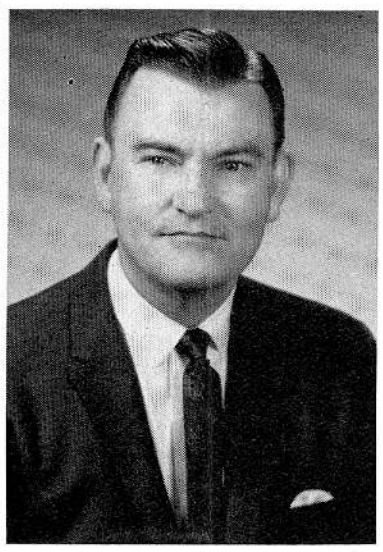
Always active in civic affairs, he was one of seven Oak Ridge residents who, in 1948, were requested by the Atomic Energy Commission to incorporate and take over the operation of the Oak Ridge Hospital from the Roane Anderson Company. He served on the Board of Trustees and as Treasurer of the Oak Ridge Hospital, Inc., from 1949 to 1959.

In March, 1959, after a referendum, Rinehart was requested to continue serving on the Board of Trustees of the Oak Ridge Hospital of the Methodist Church. He was a member of the Board for five years.

He served for a time as a member of the Roane County Planning Commission and was a member of a committee to study the feasibility of locating a hospital in Kingston, Tenn. Rinehart was a member of a group of Roane County residents who established the Roane County Community Chest. In addition, for many years he was active in the Kingston PTA.

He is a member of the Advisory Board of Directors of the First National Bank and Trust Company, Rockwood, Tenn.

Rinehart is married to the former Maxine Gorby of Pine Grove, W. Va. They have two children, Mary Ann Wiklund, Knoxville, and David. The Rineharts live at 902 Sunset Drive, Kingston.



H. H. Osborne

J. A. Elkins

C. C. Hopkins

New Contracts For Equipment

Contracts totaling more than $1.1 million have been awarded by Union Carbide Corporation's Nuclear Division for equipment to be used at Oak Ridge facilities the Corporation operates for the U.S. Atomic Energy Commission.

The Lodge & Shipley Company, Cincinnati, Ohio, was awarded a $437,648 contract for manufacture of a horizontal spinning machine to be used at the Oak Ridge Y-12 Plant.

A contract for provision of six test vessels for use at the Oak Ridge Gaseous Diffusion Plant has been awarded the Taylor Forge Division, Gulf and Western Products Company, Bellwood, Ill. The contract totals $316,477.

A $349,458 contract was awarded Moore Handley, Inc., Birmingham, Ala., for manufacture of a mill to be used at the Oak Ridge Y-12 Plant.

Elkins, Hopkins, Osborne Named to New Positions

The appointment of J. Alton Elkins as Financial Manager of Union Carbide Corporation's Nuclear Division was announced recently by Roger F. Hibbs, President of the Nuclear Division. Reporting to the Division President, Elkins will have overall responsibility for the operations of the General Accounting and Finance Division, Computing Technology Center and Purchasing Division.

Hibbs also announced two other appointments: Clyde C. Hopkins as Manager of Accounting and Finance; and H. H. Osborne as General Purchasing Agent. The appointments are effective April 1, 1970.

Elkins, who has served as General Purchasing Agent since 1957, is a native of Little Rock, Ark. He attended the University of Colorado and the University of Arkansas where he majored in finance and business administration.

Investment Banker

He was in the investment banking business in Little Rock before coming to Oak Ridge in 1944 as manager of purchasing, traffic, stores, receiving and shipping for Ford, Bacon and Davis Engineers.

He joined Union Carbide in 1945 as manager of materials at the Oak Ridge Gaseous Diffusion Plant. He supervised establishment of the Carbide materials management system at the Oak Ridge Y-12 Plant and assisted in establishment of a similar system at the Oak Ridge National Laboratory.

Elkins served as manager of materials, purchasing, finance and accounting at the Paducah Gaseous Diffusion Plant prior to his appointment as assistant general manager of finance and accounting in Oak Ridge. He was appointed General Purchasing Agent in April, 1957.

Elkins is a member of the Purchasing Committee established by the Chief of the Contracts Division, Atomic Energy Commission; is the coordinator for the Nuclear Division management information system; and chairman of the Division's materials management committee.

He is married to the former Lisa Klein, Palo Alto, Calif. They live at 102 Ogden Lane, Oak Ridge.

Succeeds Rinehart

Hopkins, who has served as Head of Product Engineering and Scheduling at the Oak Ridge Y-12 Plant, succeeds Oral Rinehart as Manager of General Accounting and Finance. Rinehart is retiring in June after more than 40 years of service with the Union Carbide Corporation. Until June he will serve as a special assistant to the Division President.

A native of Brownsville, Tenn., Hopkins received his bachelor's degree in accounting from the College of Commerce, Bowling Green, Ky., joining Union Carbide's Nuclear Division in 1952. He was assigned to the Oak Ridge Y-12 Plant and was in Production Control prior to being appointed Head of Product Engineering and Scheduling.

He is married to the former Ada Rudolph, also of Brownsville, Tenn. They have two daughters, Cindy and Susan. They live at 106 Woodridge Lane, Oak Ridge.

Osborne, the Nuclear Division's new General Purchasing Agent, has been working at the Paducah Gaseous Diffusion Plant as Head of Finance and Materials.

Native of Virginia

A native of Pennington Gap, Va., he has taken courses at The University of Tennessee extension and the Paducah Junior College.

Osborne joined Union Carbide in 1945 and was assigned to the Oak Ridge Gaseous Diffusion Plant where he held several positions, the last being receiving supervisor. He joined the staff of the Paducah facility in 1951 as supervisor of receiving and shipping. He served as head of the materials department, was responsible for data processing activities, and served as head of accounting before being named Head of Finance and Materials in 1964.

He is married to the former Emma Jean Redmond, Leadville, Colo. They have two children, Donna Jean and Steven Craig.

The Computing Technology Center will continue under the direction of Charles L. Allen.

1969 Carbide Sales Hit New High

Union Carbide's sales in 1969 reached a record high of $2,933.0 million, an increase of nine percent over 1968 sales of $2,685.9 million, it was announced in a preliminary report recently by Birny Mason, Jr., chairman of the board. Earnings increased at a higher rate than did sales, to a total of $186.2 million, or $3.08 a share. This is 19 percent above 1968 earnings of $157.0 million, or $2.60 a share.

Mason said that the gain in sales from domestic operations for the year had been 6 percent, and that the corporation's overall gain had been brought up to 9 percent by an 18 percent increase in sales from international operations. All of the Corporation's principal lines of business contributed about equally to the sales growth.

Fourth Quarter Sales

In the fourth quarter, sales were 7 percent higher than in 1968, and earnings were 69 cents a share. In the fourth quarter of 1968, earnings of 64 cents a share were reported, after allowance for a loss of 10 cents a share due to the termination of mining operations in Guyana.

Several factors were cited by Mason as having been responsible for earnings growing at a greater rate than sales. Improvements in plant efficiency and the discontinuance of some product lines, both at home and overseas, enabled the corporation to maintain its plant operating margins unchanged from the prior year, in spite of a decline in the corporation's domestic selling price index of approximately 2 percent and substantially higher labor and material costs. In addition, overhead costs have been kept under good control.

Capital Gains

The good earnings performance was aided also by capital gains resulting from the sale of certain assets, principally the corporation's pharmaceutical subsidiary, Neisler Laboratories, which was sold in the first quarter of 1969. These capital gains, however, were more than offset by a lower investment tax credit and a substantially higher overall effective tax rate.

Mason made reference to the explosion and fire that took place in the corporation's chemicals and plastics plant at Texas City last October, saying that repair of the damaged olefins unit is proceeding on schedule and operations are expected to resume no later than March 1. He said that Union Carbide had been able to maintain deliveries of most products to customers without interruption through shipments from inventory, from production at other locations, or through purchase. As previously reported, the major portion of the loss is covered by insurance and the effect on earnings was approximately 3 cents a share, taken in the fourth quarter.

Cautious Outlook

Commenting on the outlook, Mason said, "We saw some flattening out of our rate of sales gain in the fourth quarter. Consequently, we view the immediate future with some caution. It is quite probable that our sales increase during the first half of 1970 will be less than experienced during the corresponding period of the prior year. Under these conditions, operating earnings, particularly in the first quarter, could be below those for 1969. Nevertheless, we are fairly optimistic about 1970 and look for

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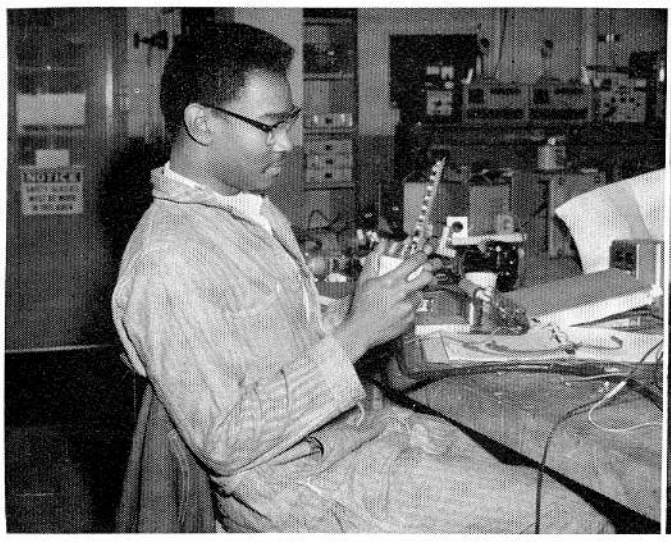
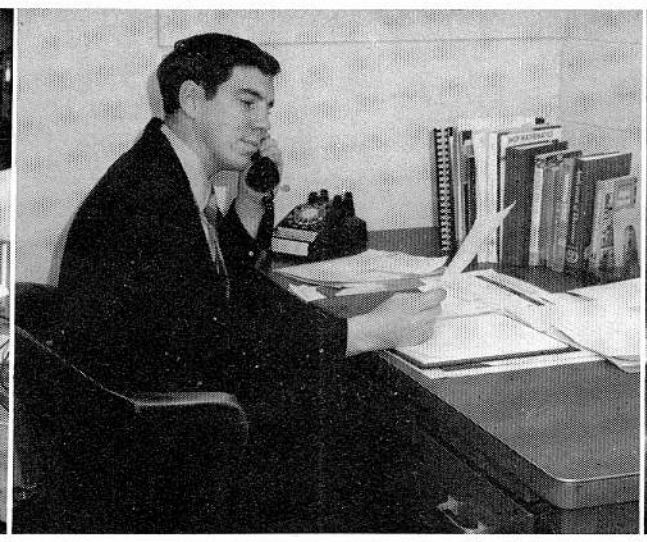
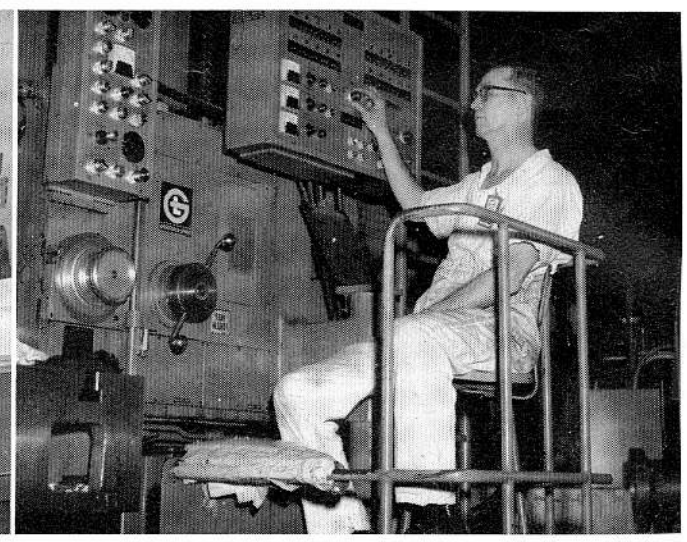


CLARENCE E. FORNEY, Electronics



THOMAS D. CABE, TAT Staff



EDWIN F. JONES, General Machine Shop

Success Story

TAT Talents Are Utilized To Fill Many of Y-12 Plant Needs

(Editor's Note: The TAT Project, a manpower development program, started in Y-12 some three years ago, has now some success stories under its belt.

Three Y-12ers—Edwin F. Jones, General Machine Shop; Clarence E. Forney, Electrical and Electronics Department; and Thomas D. Cabe, now on the TAT staff—were chosen at random as successful 'graduates' typifying the value of the program to Y-12 alone . . . not to mention the region and other industries.)

By JAMES A. YOUNG

There was obvious pride in his voice as he related the amount of income tax he paid last year (if anyone can be proud of paying taxes!). "I believe the TAT school is the best investment the government could have made." From a $3,500 annual mean-wage to almost triple that last year puts ex-jack-of-all-trades Edwin F. Jones into one of the many success stories from the Training and Technology Project, now in its third year in Y-12.

The experimental program has produced some interesting stories:

- 22 young blacks from Chicago's south-side ghetto, now employed at the National Accelerator Laboratory, near Batavia, Ill.
- A young man classified by his high school as being borderline mentally retarded, now a construction welder. TAT discovered his trouble was not mental. His vision was distorted by a muscular disorder in his eyes. Corrective glasses and therapy restored his eyesight to normal.
- A slum-reared girl formerly on welfare now successfully employed as a highly-skilled glassblower at a Berkeley, Calif., firm.
- Approximately 260 graduates now employed in the Oak Ridge Y-12 Plant in skills they did not have three year ago.
- School drop-outs, now gainfully employed, attending night classes to obtain high school diplomas, some even attending college-level classes.

"I was kind of shocked to realize I was a drop-out," explained one graduate. "A beautiful thing," he described the school.

Begun in June of 1966, the Training and Technology Project is under the aegis of Oak Ridge Associated Universities, in cooperation with the Nuclear Division and The University of Tennessee. It receives support and assistance from such organizations as the U.S. Office of Education, the Atomic Energy Commission, the Department of Labor, the Department of Health, Education and Welfare, and now the recently added new partner, the Appalachian Regional Commission.

'Do It Right!'

"I learned a lot of things," Edwin Jones stated. "First, I learned you must do something right the first time. A part is inspected, and if it doesn't pass, you have to do it again. It's simplier and cheaper to get it right the first time."

A natural-born machinist, as one of Jones' supervisors describes him, the Y-12er was born and raised in the upper East Tennessee section near Greeneville.

"I have done a little bit of everything," he smiled. "From school bus driving, cabinet-making, working in a printing plant, to keeping a grocery store." (Mrs. Jones, the former Charlotte Harmon, still maintains the family store at Baileytown.) "The TAT school has tripled my income," said the 52-year-old Jones. "Imagine a man at my age learning a new trade!"

May Move Closer

Long active in the Ruritan Club of Baileytown, Jones is on the board of directors of the Baileytown Community Chest. He lives in Canton Hill and commutes to his home on weekends. "We'll probably move closer to this area as soon as we get settled," he explained. The Joneses have a son, Gary, who works at the Formex Corporation at Greeneville.

Sports and boating on Cherokee Lake occupy some of their spare time.

"The discipline of work habits changed my life," is the description Clarence E. Forney fits to the TAT Project. "I was attending a vocational school, but TAT is different. You actually learn how to work there; it's not all instruction." Forney graduated in the first class from TAT back in 1967.

'A New Insight'

"TAT gave me an insight on an occupation that I never had before," stated the young black who was reared in a slum area in Knoxville.

Forney lives in Knoxville at 2044 Saxton Street. He and his wife Betty have three lively daughters, Carla, Chebella and Camille.

Forney is now employed in the Electronics Laboratory in Y-12. Before his TAT training, he had worked in various capacities, as a hospital orderly, a porter, and a packer at a plant in Knoxville.

A regular bowler in the Tuesday league at Starlite, Forney also enjoys fishing, swimming and hunting. His latest project is a couple of aquariums in which he and the girls are becoming adept at guppie-breeding.

'College' Drifter

Another Y-12 TAT graduate, Tom Cabe lauds the program. "My life didn't have too much direction. I had been to three different colleges, even flunking out of one.'' (He attended Tennessee Polytechnic Institute, Young Harris, down in Georgia; and The University of Tennessee.)

Cabe, upon completion of his training, was chosen to serve on the staff of instructors now concentrating on the physical testing end of the project.

When asked about his family, Tom beamed that Penny just found out last week that she's going to have a baby. (Their first!). They live at 118 Hoyt Lane, Oak Ridge; but summer finds them on their houseboat on Norris Lake more than at home here.

Tom also has an Irish setter he likes to take to out-lying fields for bird-hunting.

Graduates All Over

Union Carbide is not the only employer of TAT grads. There are graduates in highly technical industries all over . . . such companies as General Dynamics, Lockheed, IBM, Philco-Ford, and the Sandia Corporation. Before TAT training these men and women held such jobs as service station attendant, grocery clerk, bus boy, janitor, and farm laborer. Some had held part-time jobs, temporary or even seasonal; many of them were unemployed, and some even nonemployable.

While Jones, Forney and Tate are not typical TAT trainees, they fit a description recently heard of the program. "Combinations of industry, education, and other existing resources are one of the best hopes we have of substantially increasing the nation's training capacity quickly."

Gainfully employed may not be a melodic combination of words, but it's generally agreed that it sounds better than disadvantaged, underemployed, ghetto-hustling, drop-out, and other generic terms that have crept into our modern language.

NEWS

Published Bi-Weekly For The Employees Of UNION CARBIDE CORPORATION

UNION CARBIDE

NUCLEAR DIVISION

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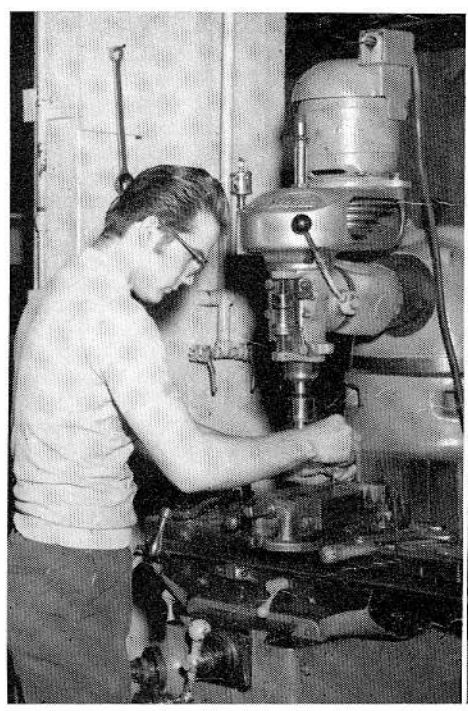
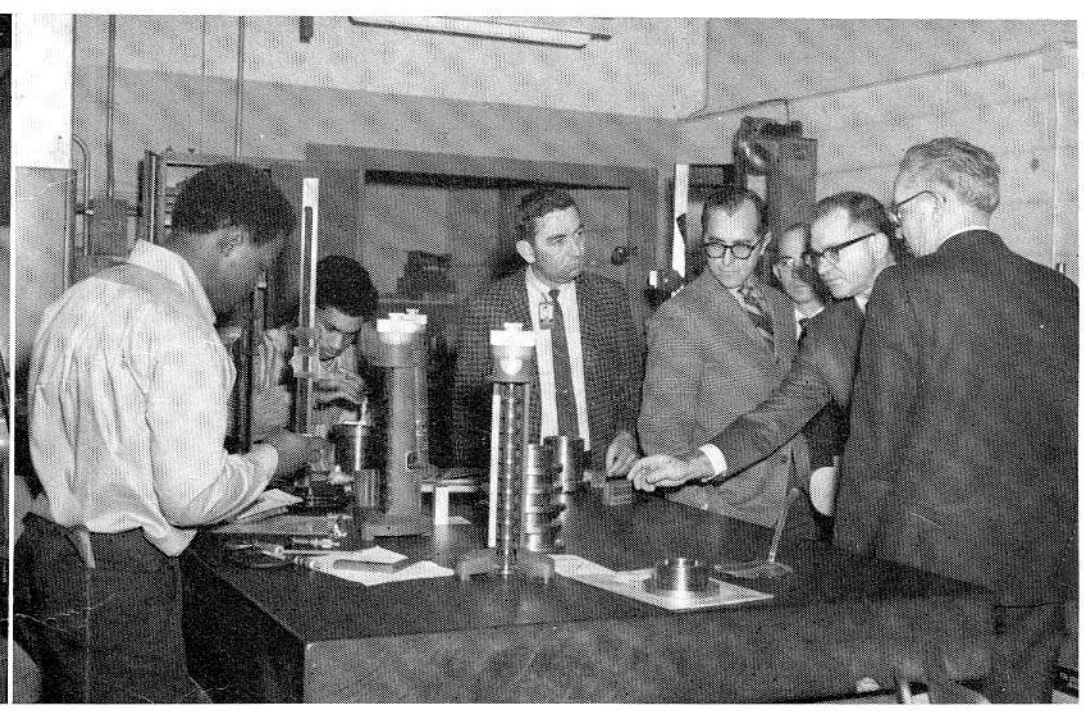


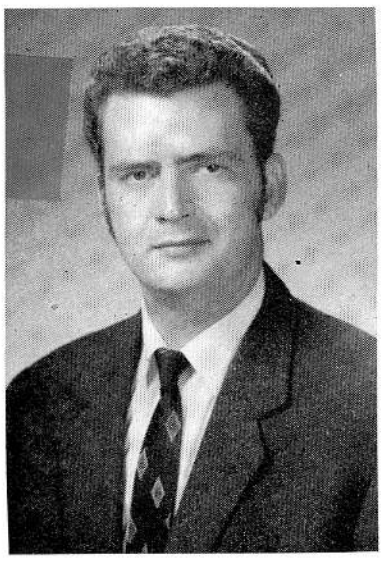


IMPRESSED BY TRAINING — Michael Skunda, National President of the Society of Manufacturing Engineers, was favorably impressed with the Training and Technology Project in Y-12 and its approach to training the nation's unemployed and disadvantaged. He particularly liked the disciplined industrial approach to training and lauded Oak Ridge Associated Universities and Union Carbide Corporation instructors and staff members for preserving a realistic industrial environment for the trainees. He toured TAT as a guest of P. F. Boyer, Y-12, who is president of the Knoxville-Oak Ridge SME chapter. Above, trainee Gordon Carmack is seen at a drill, at left, and trainees Phillip Lollis and Edward Robinson make dimensional inspections for the guests . . . from left, P. F. Boyer, H. E. Alvey, R. L. Williams, SME's Skunda and Richard E. Dew. The TAT story above shows three graduates at work.

UNION CARBIDE

—Y-12 BULLETIN

Thursday, February 26, 1970



R. H. Liddle

Moon Box Paper Is Given By R. Liddle

A Y-12 chemist playing an important role in the cleaning of lunar sample containers (moonboxes) and associated hardware for the Apollo moon landing missions described the cleaning project in a technical paper recently in New York.

R. H. Liddle, Chemistry Development, spoke to the Symposium of the International Association of Ultrasonic Manufacturers on "Earth Objects on the Moon, Ultrasonics for Super Cleaning." Liddle's paper was given Thursday, February 5.

In his paper, Liddle described the cleaning procedures aimed at removing all earthly contaminants that might interfere with an accurate appraisal of specimens returned from the moon. The cleaning is conducted in an ultra-clean room equipped with absolute filters and a circulation system that provides some 386 air changes per hour.

The Apollo hardware is cleaned by a series of immersions in chemical tanks in which the cleaning fluids are ultrasonically vibrated to remove tiny dirt particles from hard-to-reach crevices. After cleaning, the hardware is air dried and inspected under ultraviolet light for signs of lint or other contaminants.

The hardware then is sealed in teflon bags and shipped to the National Aeronautics and Space Administration's Manned Spacecraft Center, Houston, Texas.

Gus Angele Sets Many Conferences

Gustave J. Angele Sr., Engineering Mechanics, presented a paper in Columbia, S. C., recently, entitled "Implementing a Cross Connection Control Program." Approximately 200 persons from various cities in South Carolina attended the session, which was sponsored by the South Carolina State Board of Public Health and Clemson University.

Angele is chairman of the Board of Plumbing Examiners, having served since 1961.

He also presented a paper before the Indiana Section of the

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Y-12ERS ATTEND COURSE—The electron microprobe analyzer training course drew several Y-12ers for instruction recently at Oak Ridge National Laboratory. In the front row from left, are F. N. Bensey, K-25; J. R. Ferguson; R. J. Gray, ORNL; Margaret Eager; Katherine A. Sells; Helen V. Mateer, ORNL; C. Stevenson; T. E. Willmarth, ORNL. In the second row are J. L. Miller Jr., ORNL; A. Saffir, R. Gusica and C. May, all of the MAC staff; H. W. Dunn, ORNL; T. G. Harmon, ORNL; R. S. Crouse, ORNL; Art Hensley; T. J. Henson; ORNL. In the rear, all from Y-12, are L. A. Stephens, F. W. Postma Jr., J. H. Stewart Jr., J. E. Ferguson, C. Davenport, E. T. Creech, and L. Walker. Those not identified by plant or company are also from Y-12.

Hatmaker Rites Held February 12

Mr. George A. Hatmaker, Dimensional Inspection, died Monday, February 9, at the Community Hospital, LaFollette after a long illness. He came to Y-12 February 7, 1955.

A veteran of the U. S. Navy, Mr. Hatmaker lived at Jacksboro, where he was born. Mrs. Babs Hatmaker survives her husband there. Also surviving are Miss Deette Hatmaker, daughter; and son David, all of Jacksboro; sisters, Mrs. Glady Heatherly, Mrs. Margaret Wilson, Mrs. Glenn Wright, Mrs. Lois Baird, all of LaFollette; Mrs. Naomi Summers, Detroit, Mich.; brothers, Roy Hatmaker, Lexington, Ky.; Leon Hatmaker, Baltimore, Md.; Wiley Hatmaker, LaFollette.

G. Hatmaker

Funeral services were held Thursday, February 12, at the First Baptist Church, Jacksboro, with the Reverends Fred Garner and C. H. Robinson officiating. Graveside rites were held by the Masonic Order at the Jacksboro Cemetery.

Friends and co-workers send their deepest sympathy to the Hatmaker family.

WAIT ONE HOUR!

Drivers should allow at least one hour per average drink to regain his muscular coordination, visual acuity, and good judgment needed to operate a motor vehicle. Black coffee, cold showers, physical exercise, and other "home remedies" do not speed elimination of alcohol from the system. Time alone can do that.

OVERWHELMING PROBLEM

If we could eliminate all causes of highway accidents but one, we would still be faced with 50 per cent of the problem—drinking and driving.

Several Y-12ers Attend Week Course On Electron Probe Microanalyzer

The electron probe microanalyzer is an instrument for determining the elemental chemical composition of a sample area over one micron in diameter. The operation of the instrument is highly complicated; consequently, there is always a need to keep abreast of the newest techniques and developments in order to obtain optimum results. Schools are held at various manufacturers and universities to educate the novice and upgrade the experienced operator. The school period is usually a minimum of one week; thus the cost of personnel attending can be limited considerably. Several years may be necessary to allow the various operators to take their turns at a microprobe school. Some personnel are not directly connected with the microprobe but additional knowledge of the capabilities of the instrument is very worthwhile. Personnel in this category could not justify the expense to be sent to the school.

Since each of the three Nuclear Division plants has one or more electron microprobe analyzers, it was considered worthwhile to bring teachers and instructors to Oak Ridge for a week. The Materials Analysis Company, Palo Alto, Calif., provided six instructors and operational procedure for 24 students recently from the three plants. Classes were held each morning during the week of January 19-23 and operational instructions were carried out in the laboratory in the afternoon. The school provided an opportunity for a closer association of the personnel who are involved in similar technical discipline all over the Division.

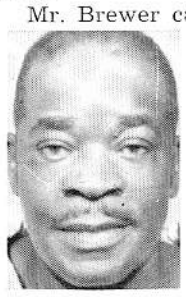
Y-12ers participating in the instructions were J. R. Ferguson, Margaret Eager, Katherine A. Sells, C. Stevenson, Art Hensley, L. A. Stephens, F. W. Postma, Jr., J. E. Ferguson, C. Davenport, E. T. Creech and L. Walker.

Arrangements for the school were made by R. S. Crouse, Metallography Group, Metals and Ceramics Division, Oak Ridge National Laboratory; J. H. Stewart Jr., Production Analysis Laboratory, Y-12; and J. N. Kelley, Purchasing Division.

Last Rites Held For Cephus Brewer

The Salvage Department sadly marks the death of Mr. Cephas Brewer. He died Saturday, February 7, in the Oak Ridge Hospital.

Mr. Brewer came to Y-12 May 13, 1944, from his native Franklin, Ga., home. He was an active member of the Bushgrove Baptist Church, Knoxville, where he sang in the first choir.



C. Brewer

He is survived by his wife the former Emma Truitt, at the family home 2215 Western Avenue, Knoxville; his son Willie Henry Brewer, Knoxville; and daughter Miss Oralee Brewer, LaGrange, Ga.; and eight grandchildren.

Funeral services were held Thursday, February 12, at the Bushgrove church with the Rev. C. F. Fuqua officiating. Interment followed in the Longview Cemetery.

Sincere sympathy is extended the Brewer family.

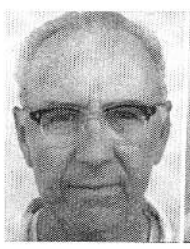
Ament, Corbin, Crossno, Gadson, Sims And Franklin Will Retire Tomorrow

A total of six Y-12ers retire tomorrow, closing out long careers with Union Carbide Corporation.

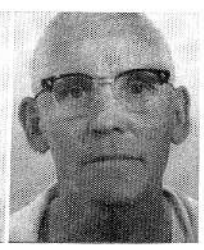
Retiring are James E. Ament, Area Five Maintenance, with 19 years service; Ulysses Gadson, Buildings Grounds and Maintenance Shops, 17 years; Arlie L. Franklin, Process Maintenance, 22 years; and James H. Simms, Engineering Mechanics, 19 years.

Norman R. Corbin, Mechanical Inspection, who has been here since 1944; and John L. Crossno Sr., who came here in 1951, have elected early retirements.

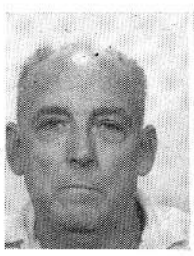
Best wishes to all six Y-12ers.



N. Corbin

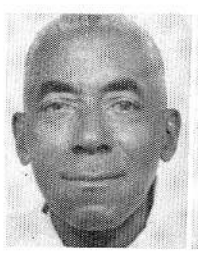


J. Ament



J. Crossno

A. Franklin



U. Gadson

J. Simms

Ride wanted from vicinity of Kingston Pike, Lovell Road section, to North or Central Portal, straight day. George Simmons, plant phone 3-7489, home phone Knoxville 966-9442.

Two car pool members wanted from vicinity of Pennsylvania and Outer Drive to Central Portal, straight day. S. E. McCoy, plant phone 3-5265, home phone Oak Ridge 483-1457.

Ride wanted or will join car pool from Clinton to Central Portal, H Shift. Mona Rollins, plant phone 3-7584, home phone Clinton 457-1527.

Will join car pool from 4309 Lamour Drive, West Knoxville, to East Portal, straight day. Loyd Krohn, plant phone 3-5226, home phone Knoxville 584-7652.

DRINK—DRUGS NIXED

Even one drink combined with such drugs as tranquilizers, antihistamines, or sedatives can produce a synergistic effect. One unit of alcohol plus one unit of drug does not necessarily equal two. It more often produces an effect greater than the sum of the two effects in terms of impaired ability.

SAFETY SCOREBOARD

The Y-12 Plant Has Operated

54 Days Or

1,847,000 Man-Hours

(Unofficial Estimate)

Through February 22

Without A Disabling Injury

SAFETY AT HOME, AT WORK, AT PLAY

ON TO ALMARTS! This happy group of Y-12ers received their gift certificates for the cumulative periods gained last year without a lost-time accident . . . average certificate $16 . . . plus the 25 per cent, which makes the awards worth around $20. Small appliances, clothing, tools and garden equipment seemed to be the general choices of most Y-12ers as selection is left to the individual. The Safety Department urges that employees 'spend' their certificate as soon as possible. Lost or stolen certificates can not be replaced. They are good for any merchandise.

Has Beens Hang Onto 4-Point Classic Lead

Recent Classic Alley action sees the Has Beens out front four points ahead of the rest of the 16-team bowlers. They downed the Smelters for three on February 12, and last week clipped the Pinbusters for three.

The Rebels, in second place, saw Jack Spears rolling like a pro week before last, singles of 246, 266 handicap; series of 636 scratch, 696 handicap! Their teams scores of 1054, 1150 . . . 2800, 3088 were high naturally!

Last week the Rippers' Bill Hoppe rolled a 601 scratch, 658 handicap series.

League standings follow:

Team	W	L
Has Beens	24	4
Rebels	20	8
Rippers	19	9
Bumpers	19	19
Splinters	16	12
Eightballs	15	13
Markers	14	14
Swingsters	14	14
Screwballs	14	14
All Stars	14	14
Playboys	12	16
Cubs	11	17
Smelters	10	18
Tigers	8	20
Pinbusters	8	20
Eagles	5	23

Big Five's Lead Is Cut By C Alley's Sunflowers

The Big Five's lead in the C Bowling circle has shrunk to a mere one point.

Fancy footwork by the HiLifers gave three points each night for the past two weeks, as Jack Cowen hit a 235 scratch game February 16, and Don McAlister did likewise on February 9.

League standings follow:

Team	W	L
Big Five	23½	12½
Sunflowers	22½	13½
Instrument Engineers	21	15
HiLifers	21	15
Hollmasters	21	15
Rounders	18½	17½
Fireballs	18½	17½
Badgers	18	18
Anodes	16	20
Royal Flush	13	23
Parbusters	12	24
Go Go Gophers	10	26

Beavers Drop Hawks, Gashousers In Volleyball

The Beavers bested the Gashouse Gang from K-25 to keep their lofty perch in the Volleyball League, downing them 15-5, 15-8, 15-5 and 15-3. The previous week they took another K-25 team, the Hawks, to the cleaners 15-8, 15-6, 15-9 and 15-6.

Still close behind the Beavers is The Pack, from ORNL with only two losses, both of them to the Beavers.

League standings follow:

Team	W	L
Beavers, Y-12	34	2
The Pack, ORNL	30	2
Set Ups, ORNL	26	6
K-25 Hawks	26	10
Old Men, ORNL	25	11
K-25 Gashouse Gang	18	18
Eagles, Y-12	17	19
Y-12 Old Men	14	22
Bombers, ORNL	11	25
Ecobums, ORNL	12	28
Blacksmiths, ORNL	9	27
Boomerangs, ORNL	4	32
Beta 2 Commodores	3	33

Recreation calendar

Saturday, February 28

BOWLING: Y-12 Bowling Tournament, Men's Teams, Mixed Doubles, Ark Lanes.

Sunday, March 1

BOWLING: Y-12 Bowling Tournament. Doubles, Singles, both men and women, Ark Lanes.

SKEET TOURNAMENT: 1 p.m. Oak Ridge Sportsmen's Association.

Monday, March 2 9

BOWLING: C League, 5:45 p.m., Ark Lanes.

TABLE TENNIS: 7 p.m., Wildcat's Den.

BASKETBALL: 6:30, 7:30, 8:30 p.m., Oak Ridge High School Gym.

Tuesday, March 3 10

PHYSICAL FITNESS (For Men) 7-9 p.m. Oak Ridge High School Gym.

BOWLING: Carbide Starlite Lanes, Knoxville, 8:30 p.m.

Wednesday, March 4 11

BASKETBALL: 6:30, 7:30, 8:30 p.m. Oak Ridge High School Gym.

BOWLING: Mixed League, 8 p.m. Ark Lanes.

Thursday, March 5 12

BOWLING: Classic League, 5:45 p.m. Ark Lanes.

VOLLEYBALL: 6:30, 7:45, 9 p.m. Oak Ridge High School Gym.

GBUs, CC 69ers Keep Second Basketball Slot

Two Y-12 teams . . . the fast-breaking GBUs and the CC 69ers stay tied for second place in the Basketball League after last week's action. The GBUs overwhelmed the Y-12 Rats 97 to 43; while the 69ers belted the Hawks 89 to 56 on February 11 and 9 respectively.

Last week the GBUs galloped by the Quarks 118 to 36! Fred Wetzel tallied 32, Bob Pucket, 25 and Doug Rymer 19. The Computes downed the Quarks 69 to 32 to stay atop the heap.

League standings follow:

Team	W	L
Computes, ORNL	11	0
CC 69ers, Y-12	10	1
GBUs, Y-12	9	1
Bombers, ORNL	10	2
Nads, ORNL	9	3
Beta 2 Miners, Y-12	8	2
Butterballs, ORNL	8	4
Rolling Bones, ORNL	8	5
Spotters, ORNL	6	4
Isotopes, ORNL	7	5
K-25 Trojans	6	5
Aggressors, ORNL	5	6
Meat Loafs, ORNL	5	7
Road Runners, ORNL	4	8
Buccaneers, Y-12	3	8
Rats, Y-12	3	8
Mod Squad, Y-12	3	9
Hawks, Y-12	2	9
Quarks, Y-12	2	10
All Stars, ORNL	1	11
Development All Stars, Y-12	0	11

Carelessness and failures are twins.

Dan Bandy Picked For U.N. Seminar

Dan Bandy has been selected to attend the Holston Conference United Methodist Youth Fellowship's United Nations Seminar in New York. The seminar began Tuesday, February 24. Its purposes are to explore the responsibilities of those working for world peace, to seek a better understanding of the purposes and aims of the United Nations in maintaining peace and security in the world and to observe the UN in operation.

In addition, the seminar will first convene in Washington, D.C. where the delegates will have an opportunity to meet with their senators or congressmen and to discuss peace issues.

Dan is being sponsored by the Concord United Methodist Church where he is an active member. He is president of the Methodist Youth Council and vice president of the Senior High United Methodist Youth Fellowship.

He is a senior at Farragut High School where he is chief photographer on the staff of the Admiral Farragut Annual. He is also a member of the Key Club.

The UN seminar delegate is an Eagle Scout and frequently serves on the examining board for Eagle Scout candidates in the Toqua District, Great Smoky Mountain Council.

Dan is the son of Mr. and Mrs. Ward Bandy, Wedgewood Hills, Knoxville. His father is head of Y-12's Photographic Lab.

Accidents don't just happen, they are caused.

Alley Cats Keep Five Point Lead In Mixed

The Alley Cats kept a firm grip on first place in the second half of the Mixed Bowling League, thanks to four point wins recently over the Mustangs and the Twisters.

This marked the mid-point of the league's second half . . . only seven more weeks of bowling!

League standings follow:

Team	W	L
Alley Cats	26	6
Hits & Misses	20½	11½
Goofers	19½	12½
Rollers	15	17
Twisters	14½	17½
Spare Parts	13	19
Mustangs	10½	21½
Roses 'N Thorns	9	23

Woodpeckers In 1-Point Lead On Starlite Alleys

The Woodpeckers enjoy a scant one-point lead in the Carbide Starlite Bowling League over Knox-way. Recently they conquered the Jaguars for three, the Has Beens for two.

J. D. Ball put a 577 scratch, 649 handicap series away recently; Lee Jackson helped the Wildcats' cause last week with a single of 200 scratch, 238 handicap.

League standings follow:

Team	W	L
Woodpeckers	39	15
Hi Jackers	38	16
Splitters	33	21
Has Beens	29	25
Thunderbirds	28	26
Dynapaths	25	29
Wildcats	19	35
Jaguars	5	49

A little forethought will save much afterthought.

Congratulations to a host of Y-12ers who are enjoying late winter anniversaries with Union Carbide Corporation.

25 YEARS

William J. Greter, Instrument Engineering, February 28.

George E. Tidwell, Tool Grinding, March 4.

Margie M. Giles, Chemical Services, March 9.

20 YEARS

Charlie M. McCarley, General Metal Fabrication Shop, February 26.

John P. Raymer Jr., Buildings, Grounds and Maintenance Shops, February 26.

Loyd I. Orr, General Weld Shop, March 2.

15 YEARS

Clayton K. Monday, Utilities Administration, March 15.

Curtis Ray, Building Services Department, March 16.

10 YEARS

Eula H. Helton, Production Assay, February 3.

Normal B. Parks, Alpha Five East Shop, February 8.

James A. Kilby, Alpha Five East Shop, February 8.

Robert B. Birdwhistell, Fabrications Systems Development, February 8.

Donald R. Vandergriff, Alpha Five West Shop, February 8.

Lynn D. Williams, Special Production Scheduling and Coordination, February 8.

Harry W. Bowles Jr., General Shop Job Liaison, February 8.

Jerry A. Huckabey, General Shop Job Liaison, February 8.

Paul H. Robbins, Assembly Operations, February 8.

Wendell A. Less, Engineering Mechanics, February 8.

Charles G. Gaylor, A-2 Shops, 9212, February 8.

Alvin Keith, Law Department, February 8.

Cecil B. Chitwood, Electrical Engineering, February 15.

Andrew Denny, Technical Publications, February 15.

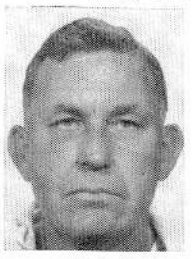
Mary S. Guy, Technical Publications, February 23.

Burl D. Chambers, Tool Design, March 7.

William R. Ragland, Product Information Center, March 7.

Harriman Services Held For H. Cole

Hubert J. Cole, Machine Maintenance, died at his home in Lakeview Heights, Harriman, Monday, February 16. He was a member of the Masonic Lodge and active in the Trenton Street Baptist Church.



H. J. Cole

Surviving are his wife, Mrs. Eloise Shaddix Cole, son William H. Cole; both of Harriman; sisters: Mrs. Rachel Wright, Columbia; Maidell Jordan, Memphis; Minnie McAdams, Meridan, Miss.; Lola Holland and Lily Boyd, Bruceton, Tenn.; brothers: Lee and Floyd Cole, Camden, Tenn.; and Orville Cole, Bruceton.

Funeral services were held Thursday, February 19, at 2 p.m. at the Trenton Street Baptist Church, Harriman, with the Reverend Branson C. Wiggins officiating. Interment followed in Roane Memorial Gardens.

Mr. Cole, a veteran of the U.S. Army, came to Y-12 October 12, 1953. He was a native of Camden.

Sincere sympathy is extended to the Cole family.

Gus Angele

Continued from Page 3

American Water Works Association in Indianapolis, last week entitled "Backflow Prevention and Cross-Connection Control." He is presenting a paper today, February 26, at Farmingham, Mass., State Teachers College entitled "Backflow and Cross-Connection Hardware." This meeting is sponsored by the United States Public Health Service and the Massachusetts State Board of Health. On March 23, 24, 25, Angele will conduct a training session on "Cross Connection and Backflow Prevention" at Lawrence Radiation Laboratory, Livermore, Calif.

On May 5, Angele will present a paper entitled "One of Our Greatest Dangers Today—Cross-Connections" at a meeting of the Southeastern Section meeting of the American Water Works Association in Augusta, Ga.

Angele has been a member of the AWWA committee for Cross-Connections and Backflow Prevention since 1958 and has been chairman of the committee since 1964. He is also serving on the same committee for the American Society of Sanitary Engineers.

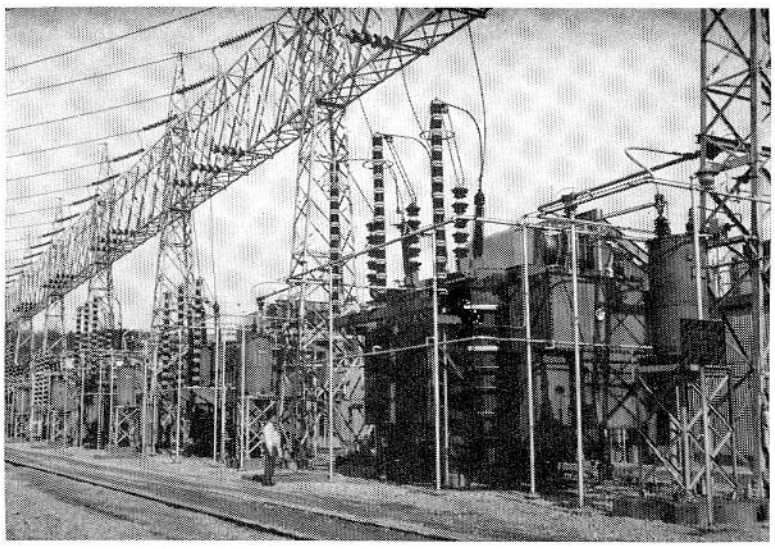
He has been employed here since 1944.

FROM COFFEE TO?

Scientists are using the freeze-drying techniques to study human tissue, particularly with respect to arteriosclerosis and metabolism ailments.

THE CARBIDE COURIER

Thursday, February 26, 1970



ONE OF THE TRANSFORMERS TEMPORARILY removed from service until increased demand for enriched uranium will necessitate the transformer being reenergized.

Operations Division Employees Effect Substantial Cost Savings

In the present period of severe financial inflationary pressures on our economy, it is more important than ever that all of us be concerned with cost savings that can be implemented in our plant. The operating and engineering personnel of the Operations Division have recently initiated an action that has resulted in a significant cost savings.

The efficient and effective use of the large electrical scrutinization of the arrangement of this equipment to insure the most economical operation. This is particularly true in the utilization of the larger power transformers. When such a transformer is energized, and not transmitting power, it still utilizes, in one year, enough power to supply the average power requirements of one hundred (100) residential customers.

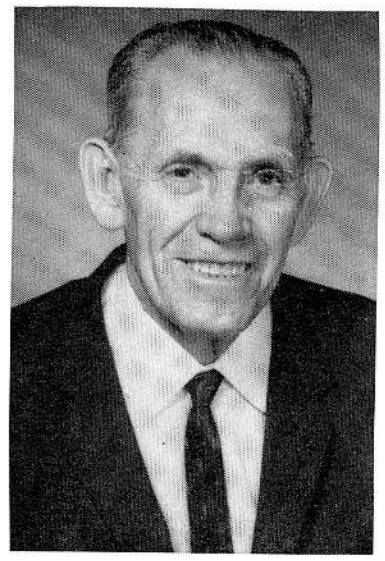
Recent power delivery scheduling changes necessitated a careful study of load distribution and equipment arrangements in our major electrical transmission, distribution, and utilization systems. This study resulted in a transfer of electrical loads from one set of transformers to another and consequently seven of the large transformers were taken out of service. This action resulted in a power savings of $27,000 per year plus an increase in separative work valued at many thousands of dollars per year. This will result in more enriched uranium being available for our domestic and free world markets.

SAFETY SCOREBOARD

OUR PLANT
Has Operated
2,520,000 Safe Hours
Through February 19
Since last disabling injury on August 19

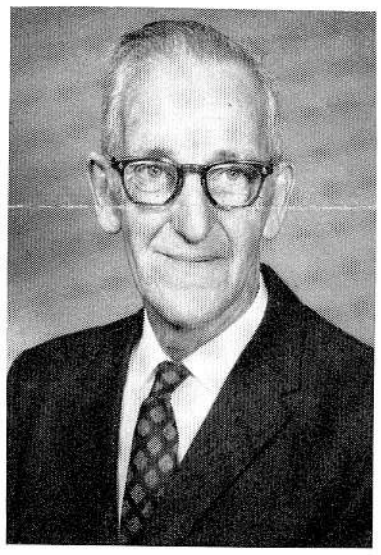
Five Old-Time K-25ers to Retire This Month Totalling 125 Years' Service

Fred D. Biggs, Thomas B. Huxley, and Earl L. Pesterfield observe their sixty-fifth birthdays this month, thus will enter retirement status on March 1. In addition, Sylvester Baird and Courtney Paul McCurry have elected to take early retirement this month. These five employees have over 125 years total service here at K-25.

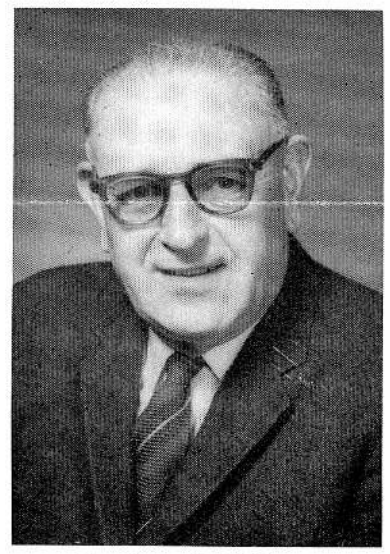


Sylvester Baird

Fred D. Biggs



Thomas B. Huxley



Courtney P. McCurry

BAIRD

Sylvester Baird has been employed as a Maintenance Mechanic in Cascade Maintenance. He was hired by Carbide in August of 1944. He is a native of Rockwood and attended public school there. Before coming with us, he worked for the Tennessee Products Company in Rockwood.

Mrs. Baird is the former Mae Gregory and they have two sons; Billy is employed at Peggy Ann Truck Stop in Rockwood, Charles works for the Ford Motor Company in Kansas City, Mo. Baird is pastor of the Dooley Street Baptist Church in Crossville and feels that he can better serve his church as a full time minister. He also plans to build a house from time to time, then sell it, and build another one. He will also have more time for fishing and hunting.

The Bairds live on Route 1, Rockwood.

BIGGS

Fred D. Biggs of Utilities Operations has been with us since September, 1944, coming here from the Aluminum Company of America. He was born in Giles County, Virginia and attended public school in Schoolfield, Va., also attended the Danville Military Institute. Biggs served in the U.S. Air Force from January, 1925 to March, 1929.

Mr. and Mrs. Biggs, the former Lucille Boulden have two sons, both of them graduates of U.T.; Fred D. Biggs, Jr., is with Pan Am Oil Company in Houston, Texas; Richard D. Biggs is an electrical engineer employed in the space program at Huntsville, Alabama.

Mr. Biggs says that he will be busy caring for several pieces of property—painting, wood work and remodeling. He also said that he had been working shift work for thirty-five years. He has traveled 100 miles a day since he started working here in 1944, that adds up to a lot of miles.

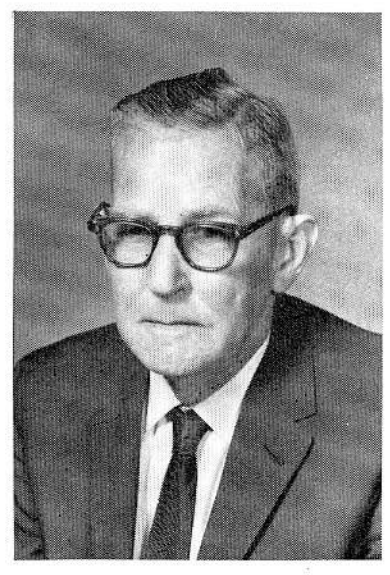
The Biggs live at 2216 Old Knoxville Highway in Maryville.

HUXLEY

Thomas B. Huxley has been a Receiving Clerk in Traffic, Receiving, and Shipping. He was originally employed here in March of 1945. Prior to that he worked for the Connecticut Carbon Company at Sunray, Texas. Huxley served in the U.S. Air Corps from 1925 to 1931. He was born in Croydon, England, and attended public schools in New Haven, Connecticut.

Huxley is married to the former Nonzie O. Quinn, and there are four children. A son, Keith, works for the American Enca Corporation and the girls; Norma Andrews, Barbara Kinnard, and Mary West are all housewives.

Mr. Huxley's post - retirement plans include gardening, fishing, and camping. The Huxleys live on Nickle Road, Route 7, Knoxville.



Earl L. Pesterfield

McCURRY

Courtney Paul McCurry is a Electrical Mechanic in Power and Utilities Maintenance. He has been employed here since October 9, 1944, coming with us from the Dravo Corporation in Wilmington, Welaware.

McCurry is a native of and attended public schools in Jonesboro, Tennessee. He is married to the former Katherine Lea of Leb-

Continued on Page 4

HAPPY WITH THE NEW SAFETY AWARD PLAN. Random shots of employees receiving their Safety Award Gift Certificates for the excellent safety performance in K-25 during 1969.

These Employees Reach 25 Years Service This Month

BOWLING TOURNAMENT

Oleta Carden, Stan Stief Win Individual Honors

A total of 20 teams, eight women's and 12 men's participated in the Annual K-25 Bowling Tournament held at the Ark Lanes on Saturday and Sunday, February 14 and 15. There were 12 entries in the Women's Doubles, 25 in Men's Doubles. Singles entries totaled 24 women and 50 men. The All Events competition included 23 women and 47 men. Twenty-five couples participated in the Mixed Doubles event.

The Wood Bees won the handicap honors in the women's team event with a total score of 2784. This team was composed of **Chloris Starlin, Jo Ann Johnson, Betty Kemper, Bobbie Hill, and Judy Walker.** The Pay-Offs had the best scratch score—2237.

The Lab Demons had both the high scratch and high handicap score in the men's team event with a 2567-2885 score. This team was composed of **Jim Qualls, Larry Allard, Ted Bartlett, Seth Wheatley and Charley Hale.** The Full House fivesome had the next best handicap score, thus winning the handicap trophies.

Oleta Carden and **Sue Davis** were high in both the scratch and handicap scores in Women's Doubles with 1095-1314. **Helen Hobson** and **Vernice Clower** had the next best handicap score, thus they get the handicap trophies.

Stan Stief and **Sheldon Jacobs** were the winners of Men's Doubles with a handicap score of 1216. **C. E. Jones** and **Martin Ginsburg** had the best scratch score with 1094.

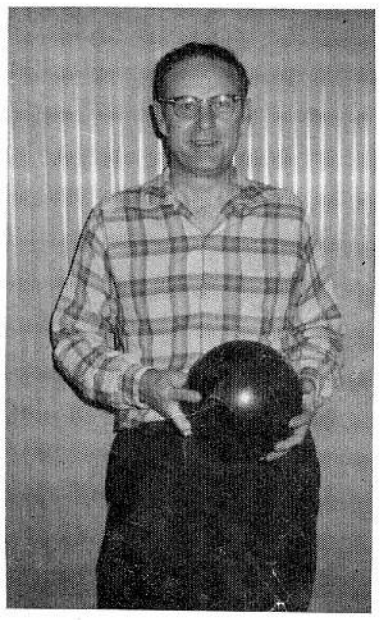
Roslyn Bridges repeated her last year's victory in the women's singles, winning both scratch and handicap honors wit ha 489-609. **Vernice Clower** had the next high handicap score, thus wins the handicap trophy.

Troy Beets was the high handicaper in the men's singles, rolling a 670 total pins. **Earl Severs** had the best scratch score with 575.

The scratch and handicap honors in All Events went to the same bowler in both the men's and women's division. **Oleta Carden** scored a total of 1525-1813. **Stan Stief** had high scores of 1655-1862. **Sue Davis** and **Chuck Brockwell** had the next best scores to win the handicap trophies.

Dot and **Walt Rule** were the best in the Mixed Doubles in both scratch and handicap competition with scores of 1095-1260. **Betty Kemper** and **Roy Howell** win the handicap trophy in Mixed Doubles.

Here are all the winners:



TOP MALE bowler. Stanley S. Stief won both scratch and handicap honors in All Events and teamed with Sheldon Jacons to take Doubles.

WOMEN

Team	
Wood Bees	2784
Uptowners	2765
Pay-Offs	2759
Hot Shots	2742
DOUBLES	
O. Carden, S. Davis	1314
H. Hobson, V. Clower	1155
N. Hay, S. Simmons	1138
E. Walbrecht, L. Pollard	1129
C. Castle, J. Mooney	1113
SINGLES	
Roslyn Bridges	609
Vernice Clower	591
Jean Mooney	585
Oleta Carden (tie)	584
Mary Hughes (tie)	584
Martha Roberts	583
ALL EVENTS	
Oleta Carden	1813
Sue Davis	1762
Mary Foley	1738
Shirley Simmons	1730

MEN

Team	
Lab Demons	2885
Full House	2865
Late Comers	2859
Atoms	2843
DOUBLES	
S. Stief, S. Jacobs	1216
C. Hensley, C. Baker	1209
E. Huskey, L. Allard	1201
C. Jones, M. Ginsburg	1199
S. Wheatley, J. Qualls	1182
SINGLES	
Troy Beets	670
Chuck Brockwell	654
Earl Severs	647
Stan Stief	633
Earl Huskey	621
Bob Ritter	612
O. D. Boyd	610
M. J. Gibson	603
W. Wendolkowski	594
G. Marrow	592
ALL EVENTS	
Stan Stief	1862
Chuck Brockwell	1830
Charles Hensley	1800
Lee Owens	1794

MIXED DOUBLES

Dot and Walt Rule	1260
Betty Kemper and Roy Howell	1205
Jean and Jim Mooney	1194
Mary Foley and H. C. Wright	1169
Anna Lou Horton and I. D. Stephens	1160

DUAL WINNERS. Oleta Carden, L, and Sue Davis had both scratch and handicap high scores in Women's Doubles. Oleta finished first and Sue second in All Events.

Women's Bowling

Bobbie Hill won Bowler-of-the-Week honors in the February 10 session of the K-25 Women's League. Bobbie rolled a 591 handicap series total. **Marie Hester** had the best single game score with a 199 scratch, 245 handicap. **Helen Hobson's** 491 was the highest scratch series score.

Eva Elmore and **Mary Foley** shared the honors in the February 3 kegling. Eva had the best single game with a 198-244 and Mary had a 517-601 series.

Standings

Pay Offs	18	Wood Bees	11
Up-Towners	15	Bowlettes	11
Pin-Ups	13	Spotters	9
Hot Shots	13	Purchurettes	6

Men's Tuesday Bowling League

By MAL STRICKLAND

February 10 Session—Mal "Ole Pro" Strickland shot a fine 602 scratch series, including a 222 scratch game. Both games and series were high in the scratch category for the night.

James "Wrong-Arm" Parsons whacked the pins around for a 220 scratch, 259 handicap game. This was high game for the session in the handicap category.

Donald "Resurrected" Burton wound up as the top man in the handicap series category with a good 642 series.

Ed "Ole Folks" Felte, with a 576 scratch series, Bart "Smiley Simcox with a 570, and Lee "Strong Arm" Owens, with a 564 scratch series, were close in the running for session honors.

February 3 was a low scoring session, very few 200 scratch games were racked up this week. Mal Strickland rolled a 212 scratch game to take high honors in this category.

Lee Owens threw a 236 handicap game (211 scratch) to take honors in the handicap division.

Charles "Downtowner" McAlister banged out a 558 scratch series (630 with handicap) to take both scratch and handicap honors in series.

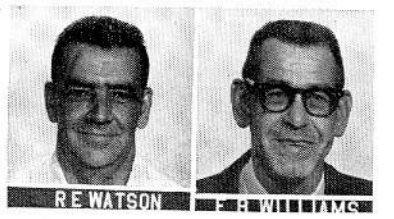
Paul "Maryville Flash" Clabough ran a close second in scratch series category with a good 557 set.

Double X	12	City Slickers	7
Possibles	10	AECOP	7
Full House	9	Late Comers	6
Atoms	8	All Stars	5

K-25 Hawks, Gashouse Gang Lose In Volleyball

The K-25 Hawks lost four matches to the league-leading Beavers in the Volleyball League week before last. They fell to the tune of 15-8, 15-6, 15-9 and 15-6. They are currently tied for third place in the league.

The Gashouse Gang posted three wins over the Old Men from ORNL on February 12, 15-10, 15-11 and 15-13. They lost game two 15-8. Last week the Gang lost four to the Beavers 15-5, 15-8, 15-5 and 15-3. They enjoy standings in the sixth position in the 13-team league.



Company Service

20 YEARS

G. P. Hargis 2-7-50

15 YEARS

T. L. Lowery 2-1-55

10 YEARS

G. E. Whitesides 2-8-60
T. J. Allison 2-15-60
J. D. McCarthy 2-25-60

Five Old-Timers

Continued from Page 3

anon, Tenn. The McCurrys have two sons. Ronald Lea, graduated from Tennessee Tech with a B.S. in Electrical Engineering and received a M.S. degree in Industrial Management from U.T. He is now manager of Masterpiece Reproduction Company at Morgantown, North Carolina. Michael Wayne McCurry graduated from Carson-Newman College and is now teaching and the basketball coach at Bearden Junior High School.

Mr. McCurry's outside interests include woodworking at his home on Route 6, Concord, plus fishing, and traveling.

PESTERFIELD

E. L. Pesterfield is a Boiler Operator in Utilities Operations. He was first employed here in October of 1944. Before coming with Carbide he was employed with the J. A. Jones Construction Company.

Mrs. Pesterfield is the former Verna Reece Harvey, and they have six sons and five daughters. All of the children except four live in this area. One son is employed in Detroit, another works in Knoxville, and another is in military service at Fort Knox, Kentucky. A daughter lives in Chattanooga. Post-retirement plans for Mr. Pesterfield include some traveling, fishing, and "just taking it easy." The Pesterfields live on Route 3, Kingston.

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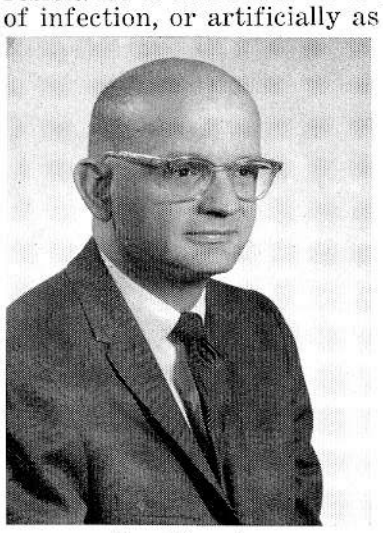
Transplantation Spinoff

By T. A. LINCOLN, M.D.

Although research in immunology has long enjoyed a high priority, the problems associated with organ transplantation have been a powerful stimulus during the past 15 years. Now the "spinoff" from this research will probably far exceed its use in transplantation.

To many, immunity means little more than protection or resistance to infection. It is achieved naturally as the result of infection, or artificially as the result of an immunization.



Dr. Lincoln

To the immunologist, immunity is the sum total of all the factors which cause a person's body to recognize another substance as foreign and to reject or destroy it.

In allergy, the individual has become hypersensitive to certain benign foreign substances such as pollen or house dust, and reacts usually in the respiratory tract or skin. In tissue immunity, the body rejects any other tissue or organ which is transplanted into it.

But tissue immunity means much more. It appears to protect us from some types of cancer and also from invasion by yeast organisms and some parasites. It is responsible for many degenerative diseases, during which the body begins to react against one of its own tissues, therefore an autoimmune reaction. It is also likely that autoimmune mechanisms play a part in the aging process.

Each Person Unique

Each person is unique unless he has an identical twin. On the surface of his cells he has substances called transplantation antigens, which are genetically determined. Because of the desire to transplant organs, immunologists are intensively studying the chemistry of these substances, how they can be detected and measured, the inheritance pattern of the genes that control them and how they produce an immune response and its fundamental nature. Practically, immunologists are also looking for ways to suppress the immune response even before they understand it.

Heart transplants have had meager success but over 2,500 kidney transplants have been performed. Eighty-seven percent of kidneys donated by living relatives survive for one year and 77 percent for two years. The longest surviving transplant from an identical twin is 12 years and from a fraternal twin is 10 years. Approximately 8,000 people face death from kidney failure each year who could be saved if successful transplants could be performed. Artificial kidneys are only a temporary expedient.

The area where the greatest benefit from a fundamental understanding of immune mechanisms would be in the prevention or treatment of a large number of autoimmune diseases.

Causes Kidney Failure

The disease which most frequently causes kidney failure is the autoimmune disease glomerulonephritis, or Bright's disease. Here the foreign stimulus is an infection, usually in the upper respiratory tract, with certain strains of streptococci bacteria. These bacteria have antigens which are similar to the tissue antigens in the cells of the filter of the kidney, called the glomerulus. Antibodies formed against the bacteria begin to react against the kidney's filter, thus the term glomerulonephritis.

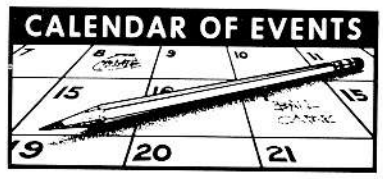
Rheumatic fever is similar to glomerulonephritis, except that the damage occurs on the heart valves. About 10 percent of patients with ulcerative colitis have autoantibodies, and it has been suggested that these arise because the body is stimulated by bacterial antigens similar, but not identical to, its own tissue. Several other kidney diseases have autoimmune mechanisms.

Reaction of Body

A number of diseases are due to a reaction of the body against one of its own tissues without any outside infection. Several types of thyroid disorders and pernicious anemia are caused by autoimmune mechanisms. Systemic lupus erythematosis is a serious disease affecting many tissues, including the kidneys, joints, skin and blood cells. Most patients with chronic rheumatoid arthritis have rheumatoid factor which behaves like an antibody against some, as yet not understood, antigen. Similarly, this factor is found in many patients with chronic hepatitis, cirrhosis and pulmonary fibrosis. Many chronic skin diseases are probably autoimmune. Even multiple sclerosis may be an autoimmune disease.

The list goes on and on. The body may protect itself against the extension of a local malignant transformation, whatever the cause, by some immune mechanism. Aging may, in part, be an internal conflict between one's own cells.

The problems associated with transplantation have been a big stimulus to research and a reason for better funding. Some may argue that transplantation is expensive and wasteful of precious medical talent, but few will complain if many crippling and sometimes fatal diseases can be controlled as a "spinoff" result of transplantation supported research.



Season Finale Set For AAUW Series

The AAUW Series concludes its current season with the showing of "8-½" on March 1, 8 p.m., at Robertsville Junior High School Auditorium.

This masterwork of Italy's Federico Fellini has been ranked above his highly praised "La Dolce Vita" in artistry. The film, which was named the Best Foreign Language Film and received the New York Film Critics Award several years back, is suggested for mature audiences.

Supposedly autobiographical in nature, "8-½" is basically the story of a 43-year-old movie director, played by Marcello Mastroianni. Through "flashbacks" to the director's youth and "flash-forwards" in the form of day-dreams which illustrate his inner qualms and the reality of day-to-day existence, Fellini lashes out at hypocrisy in every form of life but suggests that "life is a feast—let's live it together."

Also starring are Anouk Aimee, Sandra Milo, and Claudia Cardinale.

Manufacturing Engineer Will Install Officials

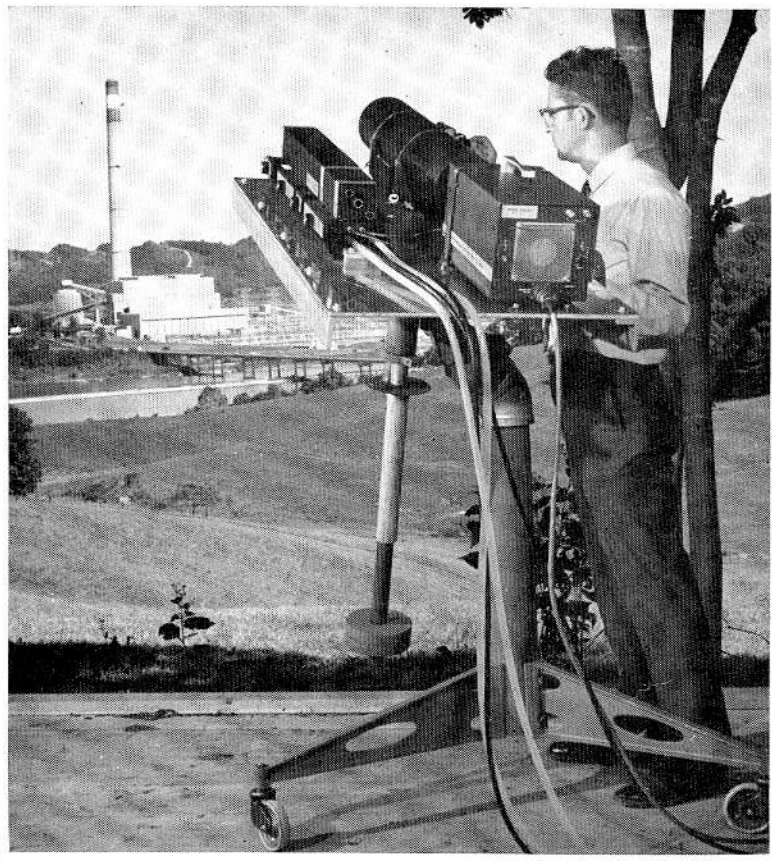
The Society of Manufacturing Engineers (SME) will install officers at a dinner dance set for Saturday March 7. The affair begins with a social hour at 6:30 p.m. at Beaver Brook Country Club. Dinner at 7 and the meeting at 8 p.m. Dancing to the music of Coy Tucker's combo will begin at 9 p.m. and continue until midnight.

John A. Winfield, national director of SME will be the guest for the installation ceremonies. He has been a senior manufacturing engineer, Supervisor of Fabrication, Supervisor of Standard Tool Engineering, Supervisor of Numerical Control Programming, Manager of Project Tool Design at Lockheed - Georgia Company, Marietta. He is a graduate of Clemson University.

Audubon Society Brings Knox Patrons Two Films

The Greater Knoxville Area Audubon Society and the Wildlife Society are bringing two motion pictures to Knoxville showing some of the world's most beautiful scenery and many species of wild birds and animals.

The first film "Scandinavian Saga" will be shown Wednesday, March 11; and the second one "The Vanishing Sea" on March 31. Single tickets will be $1.25 for adults and 75 cents for students; but tickets for both features are only $2.25 for adults and $1.25 for students. They may be obtained by writing Wildlife Films, Box 1213, Knoxville, or from the ticket office at the University of Tennessee Student Center.



LASER GUNNING—A specially adapted laser gun is being used here in an unusual research program on problems of air pollution. The laser is being 'fired' at the nearly invisible plume of effluents from the Tennessee Valley Authority's Bull Run Steam Plant in an attempt to learn more about plume dispersal in the atmosphere. Aiming the laser device is Searle D. Swisher of the Oak Ridge Atmospheric Turbulence and Diffusion Laboratory.

Air Pollution Study Uses Laser 'Eye' in AEC Effort

Like the weather, there's a lot of talk about air pollution. But unlike the weather, something is being done about air pollution in a study now under way here.

The study, representing the combined efforts of a number of government agencies, is an outgrowth of mounting national concern over air pollution which is increasing at a rate that parallels our population growth, technology development, increasing urbanization, and skyrocketing energy demands.

The project will focus on problems of air pollution through the borrowed "eye" of an unusual research instrument known as a LIDAR, pronounced "Li' dar." Consisting of a pulsed laser and associated optical and detector equipment, the LIDAR (for Light Detection and Ranging) provides research data on the basis of projection and reflection of high intensity beams of light.

Target—High TVA Stack

The "guinea pig" in the Oak Ridge project is the 800-foot chimney of the Tennessee Valley Authority's Bull Run Steam Plant—selected for the study because of its great height, isolation and efficiency of operation which results in a nearly invisible plume of effluents. It is the behavior of the plume which is of prime interest in the study.

The allies in this cooperative assault on problems of air pollution and the reasons for their involvement are:

1. The Atmospheric Turbulence and Diffusion Laboratory (ATDL) at Oak Ridge, a unit of Environmental Science Services Administration—which for years has studied the nature of atmospheric conditions in Oak Ridge for the Atomic Energy Commission's Oak Ridge Operations;

2. The AEC—because of its efforts to insure safe stack discharges from nuclear research and production facilities which have established the Commission as a pioneer in air pollution control;

3. The National Air Pollution Control Administration of the Public Health Service—which provided funds for purchase of component parts of the LIDAR;

4. The TVA—which is providing supplemental meteorological observations at its Bull Run Steam Plant to obtain complete information on plume dispersal, information that would also be of value in the design of power plant chimneys; and

5. The Oak Ridge National Laboratory—because of its technological expertise which was used to advantage in perfecting the electronic system of LIDAR.

Pollution Study

The LIDAR was designed and constructed by W. M. Culkowski and Searle D. Swisher of ATDL. F. A. Gifford, director of ATDL, explained that the primary goal of the Oak Ridge project, "is to gain a better understanding of chimney plume properties which are important in research on air pollution problems."

The LIDAR is positioned incongruously on a pastoral hillside at the eastern edge of the Oak Ridge city limits, overlooking a valley in which the Bull Run plant is located.

Culkowski explained that the Oak Ridge LIDAR is a unique instrument, incorporating technological aspects of other laser-based systems operated in similar atmospheric studies at the AEC's Brookhaven National Laboratory, the Stanford Research Institute, and a few other locations.

'Invisible' Beam

The heart of the Oak Ridge system is a laser—consisting of a glass rod coated with neodymium—a rare metallic element. When charged with 3,000 volts of electricity, provided by a supplementary power supply, the laser dissipates the stored energy in the form of a brief burst (20 billionths of a second) of high intensity monochromatic light.

Unlike the beam of light from a

Continued on Page 6

LIBRARY LISTINGS

As a continuing service, Nuclear Division News **will publish representative lists of recent acquisitions by the libraries at Oak Ridge Gaseous Diffusion Plant, Oak Ridge National Laboratory, and the Oak Ridge Y-12 Plant. When possible, we will also include information concerning some recent additions to the library at Oak Ridge Associated Universities.**

Oak Ridge Gaseous Diffusion Plant

A Method of Measuring the Costs and Benefits of Applied Research. J. W. Sprague.

Ancillary Techniques of Gas Chromatography. L. S. Ettre.

Elements of Design Engineering. J. P. Vidosic.

U. S. Industrial Outlook—1970. Government publication.

Organizations: Systems, Control, and Adaptation (2nd ed.). J. A. Litterer.

Ultrasonics for Industry, 1969 (Proceedings of Conference).

Annual Review of Nuclear Science (Vol. 19).

Annual Review of Physical Chemistry (Vol. 20).

High Speed Testing. The Rheology of Solids (Proceedings of a Conference).

Oak Ridge National Laboratory

The Challenge of Climate—Man and His Environment. Robert Silverberg. (Central, Bldg. 4500).

Technological Man—The Myth and the Reality. Victor C. Ferkiss. (Central, Bldg. 4500).

International Physics and Astronomy Directory (Thermonuclear—Bldg. 9201-2, Y-12 Area).

The World Almanac and Book of Facts, 1969. (Thermonuclear—Bldg. 9201-2, Y-12 Area).

Human Genetics. Victor A. McKusick. (Biology — Bldg. 9207, Y-12 Area).

Laboratory Techniques in Membrane Biophysics. An Introductory Course. W. McD. Armstrong and others. (Biology—Bldg. 9207, Y-12 Area).

Genetic Organization, A Comprehensive Treatise. E. W. Caspari and A. W. Ravin, Eds. (Biology—Bldg. 9207, Y-12 Area).

Textbook of Immunopathology Peter A. Miescher and Hans J. Muller-Eberhard, Eds. (Biology—Bldg. 9207, Y-12 Area).

Theory of Elasticity. Stephen Timoshenko and James Norman Goodier. (Technical, 9711-1, Y-12 Area).

The Management of Computing Programming Projects. Charles Phillip Lecht and American Management Association. (Technical, 9711-1, Y-12 Area).

An Introduction to Dimensional Analysis for Engineers. John F. Douglas. (Technical, 9711-1, Y-12 Area).

Electronic Spectra of Transition Metal Complexes, An Introductory Text. Derek Sutton. (Technical, 9711-1, Y-12 Area).

Oak Ridge Associated Universities

The Treatment of Hodgin's Disease. Enrico Anglesio.

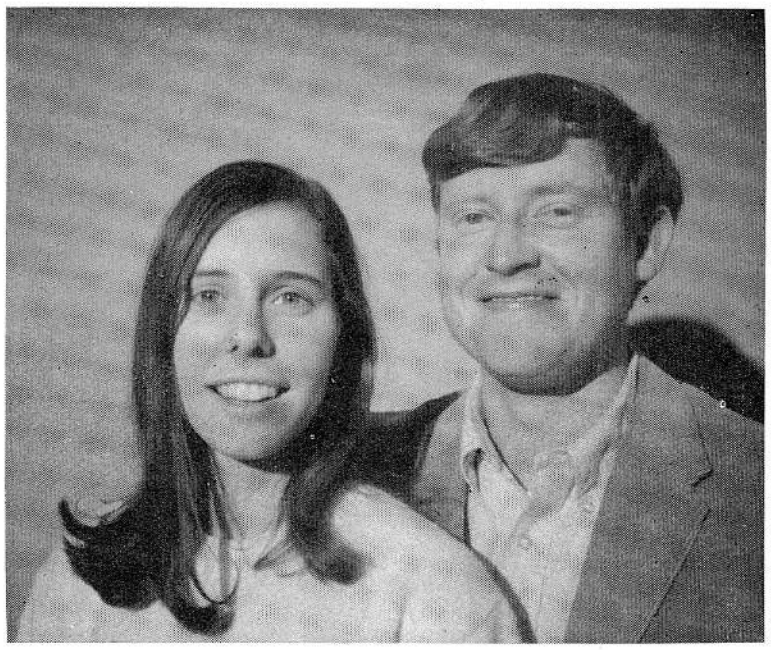
Cancer Chemotherapy: Endeavors to Breakthrough the Barriers. (Proceedings of Conference).

Cell Cultures for Virus Vaccine Production. (Proceedings of Conference).

The Cell Cycle: Gene-Enzyme Interactions. G. M. Padilla, and others, Eds.

Introduction to Health Physics. Herman Cember.

Directory of High-Energy Radiotheraphy Centres.



IN 'HOBSON'S CHOICE'—Larry Owens, of the Oak Ridge Y-12 Plant's Assembly Division, and his wife Joanne will be appearing in "Hobson's Choice," a comedy about early 20th Century England, at the Oak Ridge Playhouse February 27, 28 and March 6, 7, 13, and 14 at 8:20 p.m. Tickets are available Wednesdays through Saturdays of performance weeks from 10 a.m. to 5:30 p.m. Advance reservations may be made by calling 483-1224 during box office hours. The play is suitable for family groups, and student discounts are in effect for all Friday performances.

Air Pollution

Continued from Page 5

ruby laser which can be seen, the neodymium light beam is invisible to the human eye because it is in the infra-red portion of the light spectrum, according to Culkowski.

By means of a telescopic system, the LIDAR is aimed at the rising plume from the Bull Run chimney. Culkowski explained that a portion of the light beam which strikes minute particles in the plume is reflected back into the optical system of the LIDAR, similar in some ways to radar. The weakreflected beam is amplified by a photomultiplier and projected on the screen of an oscilloscope.

"The information we want," said Culkowski, "is obtained by analyzing photographs of the oscilloscope face." The oscilloscope pattern provides a "cross section," or picture segment, of a portion of the rising plume, and thus reveals data on the dispersion or behavior of the particles constituting the plume.

Research Is Shared

Research information gained during the project will be shared among the participating groups, and a formal report will be prepared for general use at the completion of the project.

The AEC's interest in air pollution dates back to the early days of the nation's atomic energy program, before the term "air pollution" came into common usage.

Shortly after creation of the AEC, in 1947, a meteorological research program was established in Oak Ridge to provide information on the characteristics of the local atmospheric environment which would help to insure that discharges from the Oak Ridge nuclear plants were completely safe.

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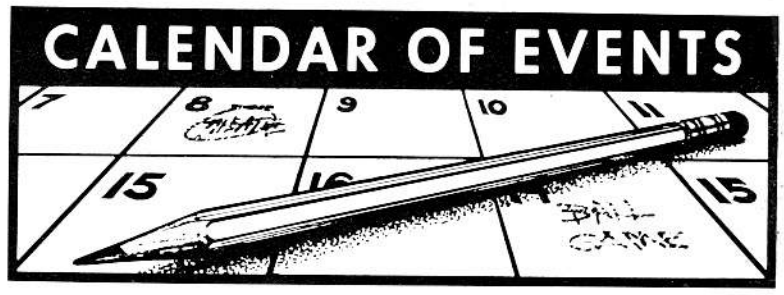

TECHNICAL

Tonight

John A. Swartout, vice president of Union Carbide Corporation and Director of Technology, will be featured speaker at the Engineers Week Banquet. The event is part of the week's activities being sponsored by the National Society of Professional Engineers and local chapters of engineering societies. Oak Ridge Country Club, 7:30 p.m.

February 27

W. K. Baker, University of Chicago, will speak on the "Position Effect Variegation and Ribosomal RNA." Biology Division Seminar, First Floor Tower Annex Conference Room, Building 9207, 12:15 p.m.

February 27

E. Hilf, Yeshiva University, Belfer Graduate School and Goddard Space Flight Center, will speak on "Hot Nuclear Matter in Strong Gravitational Fields." Physics Division Seminar, East Auditorium, Building 4500N, 3:15 p.m.

March 4

S. R. Buxton, ORNL, will speak on "Properties of Lanthanide Oxide Sol-Gel Microspheres." Chemical Technology Seminar, Central Auditorium, Bldg. 4500-N, 3 p.m.

March 7

The Society of Manufacturing Engineers (SME) will install officers. Dinner-dance at Beaver Brook Country Club, 6:30 p.m.

March 11

Edmund Klein, Roswell Park Memorial Institute, will speak on the "Immunological and Genetic Aspects of Skin Cancer." Biology Division, Cancer Research Journal Club, First Floor Tower Annex Conference Room, Building 9207, 12:15 p.m.

COMMUNITY

February 27

The Carbide All-Stars will face the All-American Redheads, a professional women's basketball team that plays against only men's teams. The Champion women's team is brought to the area by the Oak Ridge Scottish Rite 32° Club. Last year the Redheads won 169 of 203 games played. At 8 p.m., Oak Ridge High School Auditorium.

J. Kemme, Los Alamos Scientific Laboratory, will speak on "Design and Development of Heat Pipes for Thermoelectric Application." Metals and Ceramics Division Special Seminar, East Auditorium, Bldg. 4500-N, 10 a.m.

Alison P. Casarett will speak on "Radiation Effects of Preimplantation." UT-AEC Agricultural Research Laboratory Seminar, UT-AEC Conference Room, 3 p.m.

February 27, 28; March 6, 7, 13, 14

The Oak Ridge Community Playhouse will present "Hobson's Choice," a comedy. Box office opens Feb. 25. Presentations at 8:20 p.m., Oak Ridge Playhouse. Admission: $2.

March 1

AAUW Film Series showing of "8-½." Robertsville Junior High School Auditorium, 8 p.m. (See story on Page 5.)

CLEAN ROOM TECHNICIAN R. K. EDWARDS prepares to clean an Apollo moonbox in an ultrasonic cleaning tank in a Y-12 ultra-clean room. The ear masks are worn to protect the eardrums from possible damage caused by the ultrasonic system and the face mask is worn to protect the equipment from biological contamination.

Carbide Sales

Continued from Page 1

continued improvement in sales as the year goes on. Although it will be difficult to offset increasing costs for labor, material, and transportation, we do expect further improvement in the efficiency of our operations. Therefore, provided our forecast of the level of business is correct, we would expect to achieve a satisfactorily higher earnings level in 1970."

Mason also commented that the income statement for 1969 would show a reduction in research and development expenditures to a level of approximately $77 million, as compared with $83 million in 1968. This lower expenditure has resulted primarily from concentration of effort on a smaller number of programs that appear to offer the most promise. The discontinuance of the corporation's pharmaceutical activities also contributed to the reduction. Mr. Mason said that there would be some increase in research and development spending in 1970, to a level of around $80 million.